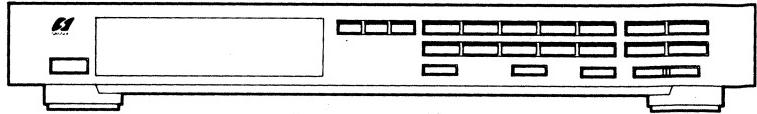




SERVICE MANUAL

TU-X301i TU-X301iL

DIGITAL SYNTHESIZER TUNER



CAUTION

1. Parts identified by the symbol on the schematic diagram and the parts list are critical for safety.
Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

•SPECIFICATIONS

FM Section

Tuning range.....	87.5 to 108 MHz
Usable sensitivity	
Mono IHF	11.2 dBf
DIN	2.0 μ V
50 dB quieting sensitivity	
Mono	18.0 dBf
Stereo	38.0 dBf
Signal to noise ratio at 85 dBf	
Mono	79 dB
Stereo	73 dB
Distortion at 65 dBf	
Mono	less than 0.1% at 1,000 Hz
Stereo	less than 0.2% at 1,000 Hz

Alternate channel selectivity (at 400 kHz)

..... 75 dB

Image response ratio

..... 45 dB

Spurious response ratio

..... 75 dB

Stereo separation

..... 40 dB at 1,000 Hz

Frequency response

Stereo 30 to 15,000 Hz

+0.3 dB, -0.8 dB

Antenna input impedance

300 ohms balanced

75 ohms unbalanced

AM Section

Tuning range.....	530 to 1,600 kHz
Usable sensitivity (TU-X301i)	
.....	50 dB/m
Signal to noise ratio	50 dB (85 dB/m)
Image response ratio	45 dB at 1,000 kHz
TU-X301iL	
LW Section	
Tuning range.....	153 to 281 kHz
Usable sensitivity	60 dB/m

Others

Output voltage and impedance

..... 775 mV/2.2 kohms

Power requirements

..... 120/220/240V

50/60 Hz

For U.S.A. and Canada 120V (60 Hz)

Power consumption

..... 10 watts

Dimensions

..... 430 mm (16-15/16")W

60 mm (2-3/8")H

257 mm (10-1/8")D

Weight

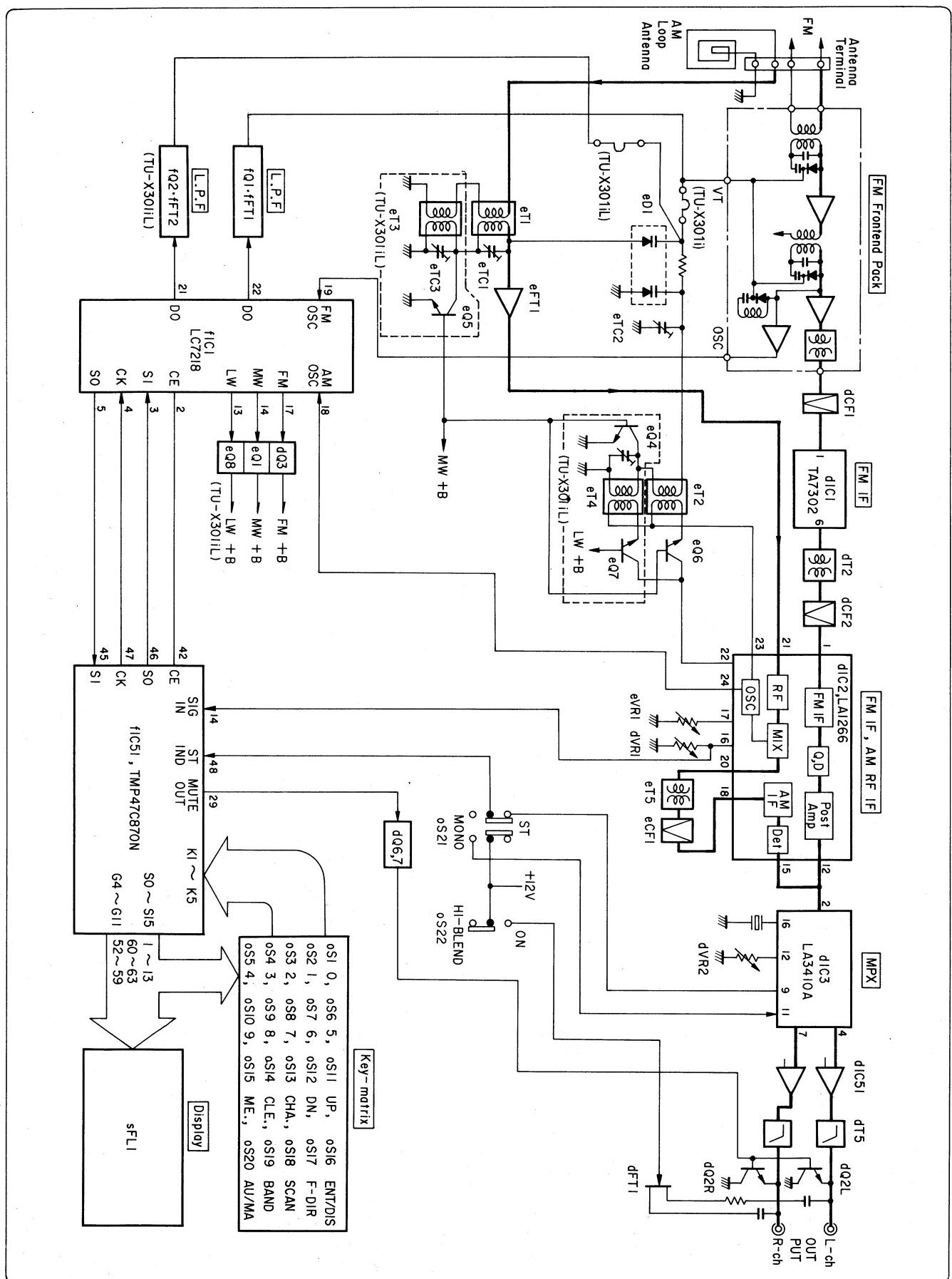
..... 2.8 kg (6.2 lbs) net

3.4 kg (7.5 lbs) packed

* Design and specifications subject to changes without notice for improvements.

* In order to simplify the explanation illustrations may sometimes differ from the originals.

1. BLOCK DIAGRAM



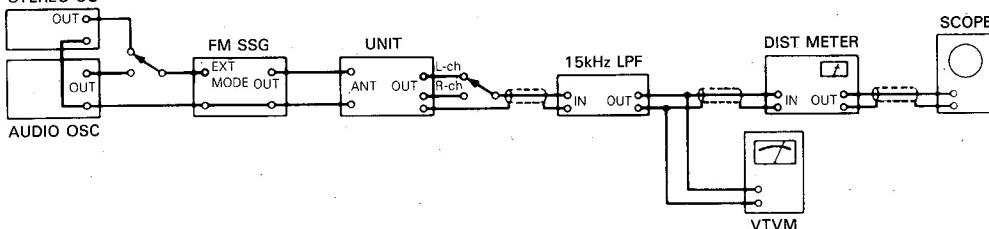
2. ADJUSTMENTS

2-1. FM Adjustment (See Adjustment points of F-6030 on Page 4)

Note: 1. BAND Switch FM
 2. FM MODE Switch MONO
 (Steps 1, 2, 3); AUTO (Step 4, 5)

3. FM NOISE CANCELER OFF
 4. Connect as shown Fig. 2-1.

Fig. 2-1 STEREO SG



STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	Reference Frequency Adj.	No Input	—	Between PointⒶ (Pin 1 of fIC1) and GND (F-6030), Frequency Counter	fIC1 (F-6030)	7.20000MHz ± 100Hz	
2.	Discriminator Coil Adj.	① No Input	—	Between PointⒷ and PointⒸ, (Across the dR9, F-6030) DC Volt Meter	dT3 (F-6030)	DC 0V ± 10mV	•Repeat procedures as stated in subject ① & ②.
		② 98MHz ANT Input, 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	FM ANT Terminal	FL Display (Reception Frequency) Output L or R ch, Dist Meter	MANUAL TUNING, TUNING (A, V) Switch dT4 (F-6030)	98.00MHz Min. THD	
3.	Muting Level Adj.	98MHz ANT Input, 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG	FM ANT Terminal	FL Display (Reception Frequency) Output L or R ch, VTVM & Oscilloscope	MANUAL TUNING, TUNING (A, V) Switch dVR1 (F-6030)	98.00MHz Output signal comes out.	
		98MHz ANT Input, 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L-R MODE 1kHz+Pilot (100% MOD.), STEREO SG		FL Display (Reception Frequency) Output L or R ch, Distortion Meter	MANUAL TUNING, TUNING (A, V) Switch dT2	98.00MHz Min. THD	
5.	Stereo Separation Adj.	98MHz ANT Input, 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L MODE 1kHz+Pilot (100% MOD.), STEREO SG	FM ANT Terminal	OUTPUT L ch, VTVM & Oscilloscope	—	Read the indication on VTVM	•Confirm R→L ch
		98MHz ANT Input, 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L MODE 1kHz+Pilot (100% MOD.), STEREO SG		OUTPUT R ch, VTVM & Oscilloscope	dVR2 (F-6030)	—35dB from the indication above.	

◆ NOTICE FOR FM ADJUSTMENT

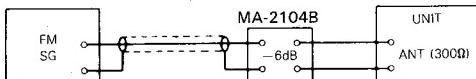
There are two kind in indication of FM SSG output attenuator.

1. Attenuator with marking of 75Ω open open indication type.
2. Attenuator with marking of 75Ω load or close load or close indication type.

FM SG output level in this FM adjustment are described as open indication type.

To feed FM signal, a dummy antenna circuit as Fig. 2-2 must be connected between FM SG output and ANT terminal (300Ω) of the unit.

Fig. 2-2



- The following table shows relations among FM SG attenuator indication (dB), available power ratio (dBf) and antenna terminal voltage ($\text{dB}/\mu\text{V}$) in each indication type.

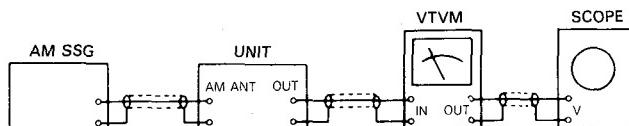
	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	-0.8 dBf 65.2 dBf	-6 dB/ μV 60 dB/ μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/ μV 60 dB/ μV

2-2. AM (MW, LW) Adjustment (See Fig. 2-4 Adjustment points of F-6030 on Page 4)

Note: 1. BAND Switch AM (TU-X301i),
BAND Switch MW (TU-X301iL)

2. Connect AM loop antenna to AM antenna terminal.
3. Connect as shown Fig. 2-3.

Fig. 2-3

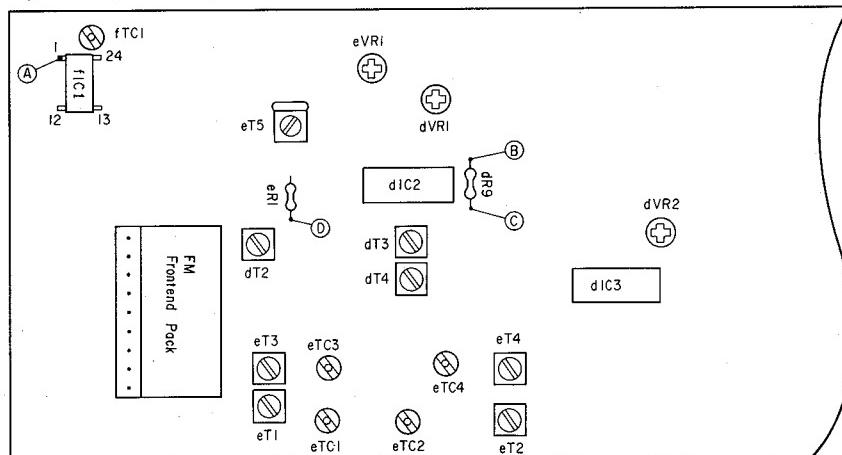
**1) AM IF and MW (AM) Tuning Adjustment**

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	531kHz (or 530kHz) Tuning Voltage Adj.	No Input	—	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (A, V) Switch	531kHz (or 530kHz)	•Repeat procedures as stated in STEP 1 and 2.
				Between Point① (eR1, F-6030) and GND, DC Volt Meter	eT2 (F-6030)	DC 1.0V±0.1V	
2.	1602kHz (or 1710kHz) Tuning Voltage Adj.	No Input	—	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (A, V) Switch	1602kHz (or 1710kHz)	•Repeat procedures as stated in STEP 3 and 4.
				Between Point② (eR1, F-6030) and GND, DC Volt Meter	eTC2 (F-6030)	8.0V±0.1V (1602kHz) 9.0V±0.1V (1710kHz)	
3.	603kHz (or 600kHz) RF Adj.	603kHz (or 600kHz) ANT Input, 30dB, 400Hz (30% MOD.,) AM SSG	AM ANT Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (A, V) Switch	603kHz (or 600kHz)	•Repeat procedures as stated in STEP 3 and 4.
				Output L or R ch, VTVM & Oscilloscope	eT1 (F-6030)	Max. Output	
4.	1404kHz (or 1400kHz) RF Adj.	1404kHz (or 1400kHz) ANT Input, 30dB, 400Hz (30% MOD.,) AM SSG	AM ANT Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (A, V) Switch	1404kHz (or 1400kHz)	•Repeat procedures as stated in STEP 3 and 4.
				Output L or R ch, VTVM & Oscilloscope	eTC1	Max. Output	
5.	IF Coil Adj.	999kHz (or 1000kHz) ANT Input, 30dB, 400Hz (30% MOD.,) AM SSG	AM ANT Terminal	Output L or R ch, VTVM & Oscilloscope	eT5 (F-6030)	Max. Output	
6.	Signal Indicator Level Adj.	999kHz (or 1000kHz) ANT Input, 70dB, 400Hz (30% MOD.,) AM SSG	AM ANT Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (A, V) Switch	999kHz (or 1000kHz)	•Make all signal in- dicators lighting up.
				Signal Indicator (FL Display)	eVR1 (F-6030)	Make all signal in- dicators lighting up.	

2) LW Tuning Adjustment < TU-X301iL only >

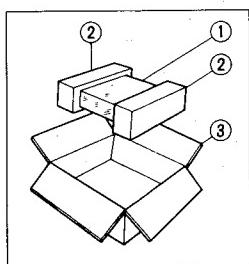
STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	153kHz Tuning Adj.	No Input	—	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (A, V) Switch	153kHz	• Repeat procedures as stated in STEP 1 and 2.
				Between Point① (eR1, F-6030) and GND, DC Volt Meter	eT4 (F-5740)	1.0V ± 0.1V	
2.	281kHz Tuning Adj.	No Input	—	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (A, V) Switch	281kHz	
				Between Point① (eR1, F-6030) and GND, DC Volt Meter	eTC4 (F-5740)	5.4V ± 0.1V	
3.	170kHz RF Adj.	170kHz ANT Input, 30dB, 400Hz (30% MOD.), AM SSG	ANTENNA Terminal	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (A, V) Switch	170kHz	• Repeat procedures as stated in STEP 3 and 4.
				Output L or R ch, VTVM & Oscilloscope	eT3 (F-5740)	MAX. Output	
4.	261kHz RF Adj.	261kHz ANT Input, 30dB, 400Hz (30% MOD.), AM SSG	Same as above	FL Display (Reception Frequency)	MANUAL TUNING, TUNING (A, V) Switch	261kHz	
				Output L or R ch, VTVM & Oscilloscope	eTC3 (F-6030)	MAX. Output	

Fig. 2-4 Adjustment points of F-6030



3. PACKING LIST

Parts No.	Stock No.	Description
1	47859300	Vinyl Bag
2	27657200	Styrofoam Packing
3	27635600	Carton Case (TU-X301i)
	27643100	Carton Case (TU-X301iL)



4. ACCESSORY LIST

Stock No.	Description
46051700	FM ANTENNA
48835500	AM LOOP ANTENNA
07563000	AM ANTENNA HOLDER
38103200	Pin Plug Cord
or 46118600	Pin Plug Cord
or 48802200	Pin Plug Cord
49041200	Operating Instruction for TU-X301i/TU-X301iL (*E-F-S)
49041300	Operating Instruction for TU-X301i/TU-X301iL (*G-I-Sw)

*Note:

E-F-S: English-French and Spanish Version

G-I-Sw: German-Italian and Swedish Version

5. PARTS LIST OF BOARD

Note

1. The symbols, EU, EG, SS and XX <EXPORT> on the parts list and the schematic diagram mean followings respectively.

EU Manufactured for European market.
(Except F.R. Germany)
EG Manufactured for F.R. Germany market.
SS Manufactured for Saudi Arabia market.
XX Standard Version.
<EXPORT>
NON MARK..... Common Parts.

2. Some printed circuit boards are not supplied assembled. To separate these in this parts list, the stock numbers are not indicated for these boards. However, stock numbers for individual parts are indicated.

3. Since some capacitors and resistors are omitted from parts lists in this parts list, refer to the Common Parts List for capacitors and resistors, which was issued on June 1987.

4. Abbreviations in this parts list are as follows.

•Abbreviations List

C.R.	: Carbon Resistor
Ce.R.	: Cement Resistor
M.R.	: Metal Film Resistor
F.R.	: Fusing Resistor
N.I.R.	: Non-Inflammable Resistor
A.R.	: Array Resistor
C.C.	: Ceramic Capacitor
C.T.	: Ceramic Capacitor, Temperature Compensation
E.C.	: Electrolytic Capacitor
E.L.	: Low Leak Electrolytic Capacitor
E.B.	: Bi-Polar Electrolytic Capacitor
E.B.L.	: Low Leak Bi-Polar Electrolytic Capacitor
Ta.C.	: Tantalum Capacitor
F.C.	: Film Capacitor
M.P.	: Metallized Paper Capacitor
P.C.	: Polystyrene Capacitor
M.M.C.	: Metallized Mylar Capacitor
A.C.	: Array Capacitor
V.R.	: Variable Resistor
S.V.R.	: Semi Variable Resistor
SW.	: Switch

5-1. F-6030 Main Board <Stock No. 01129701 = TU-X301i/Stock No. 01130005 = TU-X301iL>

Parts No.	Stock No.	Description	Parts No.	Stock No.	Description
dZ1	48729600	FM Frontend Pack	dCF1	46202500	Ceramic Filter, SEF10.7MS2 RED (TU-X301i)
•Transistor				48064800	Ceramic Filter SFE10.7MS3G RED (TU-X301iL)
dQ1	48223100	DTC114TS	dCF2	46202500	Ceramic Filter SEF10.7MS2 RED (TU-X301i)
dQ2	46540801	2SC2878		48064800	Ceramic Filter SFE10.7MS3G RED (TU-X301iL)
	or 46604301	2SC3327	dT5	46894900	Low Pass Filter TF-10
dQ3	48183400	DTA114YS	dL2	48070700	Inductor
dQ4	48183400	DTA114YS	dL3	48070700	Inductor
dQ5	48183400	DTA114YS	dL4	48070700	Inductor
dQ6	48171600	DTC114YS	dT1	49324300	FM VHF Balun
dQ7	48183400	DTA114YS	dT2	46369500	FM IF Coil
dQ8	48171600	DTC114YS	dT3	48718700	FM IF Coil
dQ9	48171600	DTC114YS	dT4	48718600	FM IF Coil
•FET			dVR1	46634700	47kΩ S.V.R., FM LOCKED
dFT1	46643501	2SK163-K2	dVR2	46634900	100kΩ S.V.R., VCO
	or 46643502	2SK163-L1	•Transistor		
	or 46643601	2SK117-Y	eQ1	48183400	DTA114YS
	or 46643602	2SK117-GR	eQ2	48171600	DTC114YS
•IC			eQ3	48171600	DTA114YS
dIC1	03605900	TA7302P	eQ4	46540801	2SC2878
dIC2	48715100	LA1266		or 46604301	2SC3327
dIC3	48491000	LA3410A	eQ5	46540801	2SC2878
dIC51	46147700	M5218L		or 46604301	2SC3327
dXO1	48272800	Ceramic OSC Element CSB456	eQ6	48223100	DTC114TS
•Diode			eQ7	48223100	DTC114TS
dD1 ~ 12	03117600	1S2473T77	eQ8	48183400	DTA114YS
dD13	46464100	1SS133	eQ9	48171600	DTC114YS
dD14	46464100	1SS133	•FET		
△dR15	46228600	47Ω 1/2W N.I.R.	eFT1	46393000	2SK192A-Y
dC4	48426900	22000pF 25V C.C.		or 46393001	2SK192A-GR
dC5	48426900	22000pF 25V C.C.	eD1	46708400	Variable Capacitance, Diode SVC321
dC6	48426900	22000pF 25V C.C.	•Diode		
dC7	48426900	22000pF 25V C.C.	eD2	03117600	1S2473T77
dC8	48426900	22000pF 25V C.C.	eD3	03117600	1S2473T77
dC19	48659800	33pF 50V C.C.	eD4	03117600	1S2473T77 (TU-X301iL)
dC23	48426900	22000pF 25V C.C.	eD5	03117600	1S2473T77 (TU-X301iL)
dC35	49198800	1000pF 50V F.C.	eD11	46708400	Variable Capacitance, Diode SVC321
dC36	49199000	470pF 50V F.C. (TU-X301i)			
dC39	49201200	3900pF 50V F.C.			
dC41	48088200	0.082μF 50V F.C.			
dC42	48088200	0.082μF 50V F.C.			
dC43	48103400	1μF 50V E.B.			

<F-6030>

Parts No.	Stock No.	Description
eTC1	46095700 or 46162900	Trimmer Capacitor 30pF
eTC2	46095700 or 46162900	Trimmer Capacitor 30pF
eTC3	46095700 or 46162900	Trimmer Capacitor 30pF
	46095700 (TU-X301iL)	Trimmer Capacitor 30pF
eTC4	46095700 or 46162900	Trimmer Capacitor 30pF (TU-X301iL)
eCF1	48069900	Ceramic Filter CFM2-450BL
eL1	46091910	Inductor 39mH
eT1	46394600	AM ANT Coil
eT2	48568800	AM OSC Coil
eT3	48577500	LW ANT Coil (TU-X301iL)
eT4	48074410	LW OSC Coil (TU-X301iL)
eT5	49323800	AM IF Coil
eVR1	46634400	15kΩ S.V.R., Sig. Ind. Level
•Transistor		
fQ1	46367101 or 48058801	2SC2603 2SC1740S
fQ2	46367101 or 48058801	2SC2603 (TU-X301iL) 2SC1740S (TU-X301iL)
fQ3	48223100	DTC114TS
fQ4	48171600	DTC114YS
fQ5	46834300	DTC144ES
•FET		
fFT1	46643501 or 46643502 or 46643601 or 46643602	2SK163-K2 2SK163-L1 2SK117-Y 2SK117-GR
fFT2	46643501 or 46643502 or 46643601 or 46643602	2SK163-K2 2SK163-L1 2SK117-Y 2SK117-GR
		(TU-X301iL)
•IC		
fIC1	49317500	LC7218
fXO1	07237700	Quartz Crystal NR-18
•Diode		
fD1	03117600	1S2473T77
fD2	46464100	1SS133
fC1	49199800	1000pF 50V F.C.
fC6	49199800	1000pF 50V F.C. (TU-X301iL)
fC7	48103400	1μF 50V E.B. (TU-X301iL)
fC9	48426900	22000pF 25V C.C.
fC11	48426900	22000pF 25V C.C.
fC14	48717800	4.7μF 5.5V E.C.
fTC1	46095700 or 46162900	Trimmer Capacitor 30pF Trimmer Capacitor 30pF
fL1	48070700	Inductor
fL2	48070700	Inductor
fL3	48070700	Inductor
•Transistor		
ΔmQ1	03083901 or 46546701	2SD313HP 2SD880
mQ2	46367101	2SC2603
mQ3	48058801 or 46367101	2SC1740S 2SC2603
ΔmQ4	46367001 or 48058601	2SA1115 2SA933S
mQ5	48229400	DTA114TS
•FET		
mFT1	46643501 or 46643502 or 46643601 or 46643602	2SK163-K2 2SK163-L1 2SK117-Y 2SK117-GR

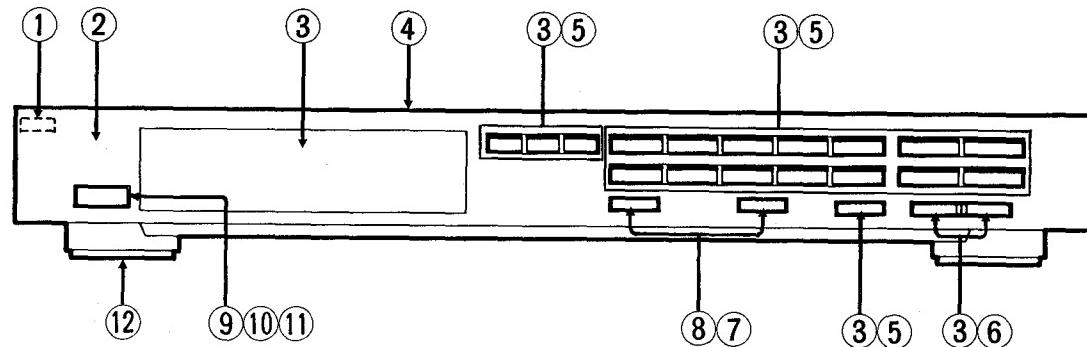
Parts No.	Stock No.	Description
•IC		
mIC1	46361200 or 48599600	L78N06 AN78N06
•Diode		
△mD1~8	03117700	10E-2
mD9	03117600	1S2473T77
mD10	03117600	1S2473T77
mD11	03117600	1S2473T77
•Zener Diode		
mDZ1	49303200 or 49303300	05AZ6.2-X 05AZ6.2-Y
mDZ2	49308100 or 49308200	05AZ27-X 05AZ27-Y
mDZ3	49303200 or 49303300	05AZ6.2-X 05AZ6.2-Y
mDZ4	49306300 or 49306400	05AZ16-X 05AZ16-Y
mDZ5	49306400 or 49306500	05AZ16-Y 05AZ16-Z
mR1	46909200	150Ω 3W N.I.R.
mC4	49247300	220pF 50V F.C.
oS25	48832900	Push SW., RESET
oZ2	48148500	2P Terminal, OUTPUT
oZ1	46547300	4P Terminal, ANTENNA

5-2. F-6031 Operational Switch & FL Display Board
<Stock No. 01129801 = TU-X301i/Stock No. 01130105 = TU-X301L>

Parts No.	Stock No.	Description
•Transistor		
fQ51	48171600	DTC114YS
fQ52	48171600	DTC114YS
fQ53	48223100	DTC114TS
fQ54	48223100	DTC114TS
•IC		
fIC51	49317400	TMP47C870N
fXO51	49334900	Quartz Element
•Diode		
fD51~60	46464100	1SS133
fD61~63	46464100	1SS133 (TU-X301iL)
fD161	46464100	1SS133 (TU-X301i)
fD162	46464100	1SS133 (TU-X301i)
fC51	48426900	22000pF 25V C.C.
oS1	49344900	Push SW., Preset "0"
oS2	49344900	Push SW., Preset "1"
oS3	49344900	Push SW., Preset "2"
oS4	49344900	Push SW., Preset "3"
oS5	49344900	Push SW., Preset "4"
oS6	49344900	Push SW., Preset "5"
oS7	49344900	Push SW., Preset "6"
oS8	49344900	Push SW., Preset "7"
oS9	49344900	Push SW., Preset "8"
oS10	49344900	Push SW., Preset "9"
oS11	48240500	Tact SW., TUNING A
oS12	49344900	Push SW., TUNING V
oS13	49344900	Push SW., CHARACTER
oS14	49344900	Push SW., CLEAR
oS15	49344900	Push SW., MEMORY
oS16	49344900	Push SW., ENTER/DISPLAY
oS17	49344900	Push SW., F-DIRECT
oS18	49344900	Push SW., P-SCAN
oS19	49344900	Push SW., BAND
oS20	49344900	Push SW., AUTO/MANUAL
oS21	46500000	Push SW., FM MODE
oS22	46500000	Push SW., FM NOISE CANCELER
sFL1	49317100	FL. Display Tube CP3023GR

6. OTHER PARTS (* Refer to the "Note" on page 5 about the symbols, EU, EG, SS and XX)

6-1. Front View



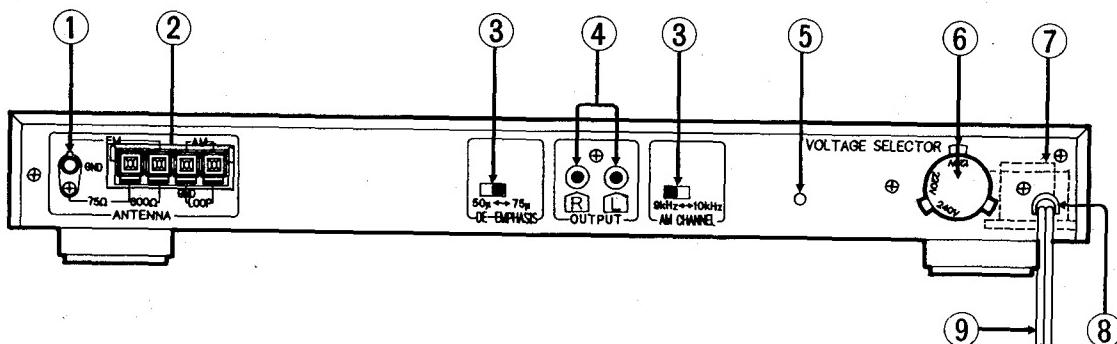
Parts List <Front View>

Parts No.	Stock No.	Description
1	27392400	Earth Plate
2	27635300	Front Panel Ass'y-A
3	27650500	Front Panel Ass'y-B for TU-X301i (XX-SS)
	27635400	Front Panel Ass'y-B for TU-X301i (EU-EG)
4	27639600	Front Panel Ass'y-B for TU-X301iL
5	27632200	Bonnet
	49344900	Push SW., CHARACTOR•CLEAR•F-DIRECT•0~9•MEMORY•BAND•ENTER/DISPLAY•P.SCAN•AUTO/MANUAL

Parts No.	Stock No.	Description
6	48240500	Tact SW., TUNING Knob, FM MODE•FM NOISE CANCELER Push SW., FM NOISE CANCELER•FM MODE
7	27627700	Knob, FM MODE•FM NOISE CANCELER
8	46500000	Push SW., FM NOISE CANCELER•FM MODE
9	27626500	Knob, POWER
△10	46364300	Push SW., POWER
△11	46943200	0.01μF 400V C.C.
12	27273510	Leg

Notice: Knobs are each portion of front panel ass'y-B except POWER, FM MODE and FM NOISE CANCELER.

6-2. Rear View



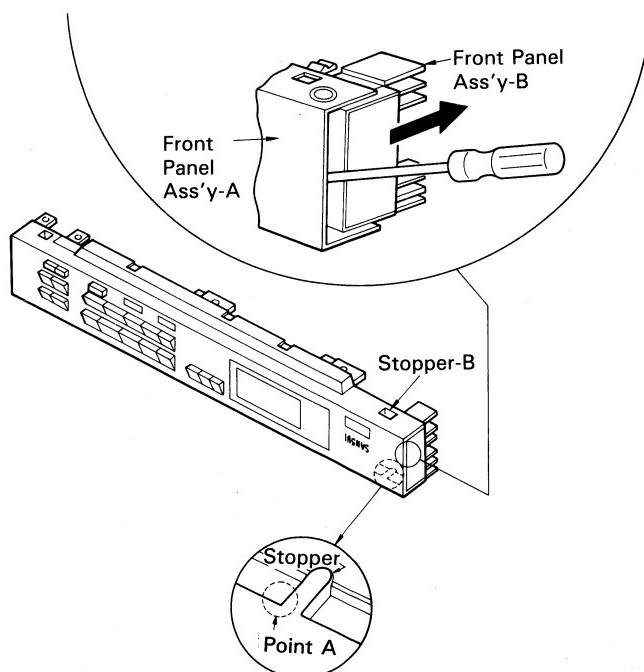
Parts List <Rear View>

Parts No.	Stock No.	Description
1	22301510	Ground Terminal
2	46547300	4P Terminal, ANTENNA
3	46533500	Slide SW., DE-EMPHASIS•AM CHANNEL for TU-X301i (XX-SS)
4	48148500	2P Terminal, OUTPUT
5	48832900	Push SW., RESET
△6	48175200	Plug, Voltage Selector for TU-X301i (XX-SS)
△7	07204700	Slide SW., Voltage Selector for TU-X301iL
△8	15033009	Power Transformer for TU-X301i (XX-SS)
△9	15033005	Power Transformer for TU-X301i (EU-EG)
△10	15033105	Power Transformer for TU-X301iL

Parts No.	Stock No.	Description
8	39106000	Strain Relief for TU-X301i (XX)
	48913500	Strain Relief for TU-X301i (SS)
	48913500	Strain Relief for TU-X301i (EU-EG)
△9	48913500	Strain Relief for TU-X301iL
	38004700	Power Supply Cord for TU-X301i (XX)
△	48837700	Power Supply Cord for TU-X301i (SS)
△	49299300	Power Supply Cord for TU-X301i (EU-EG)
△	38004500	Power Supply Cord for TU-X301iL

7. HOW TO REMOVE FRONT PANEL ASS'Y-A & B

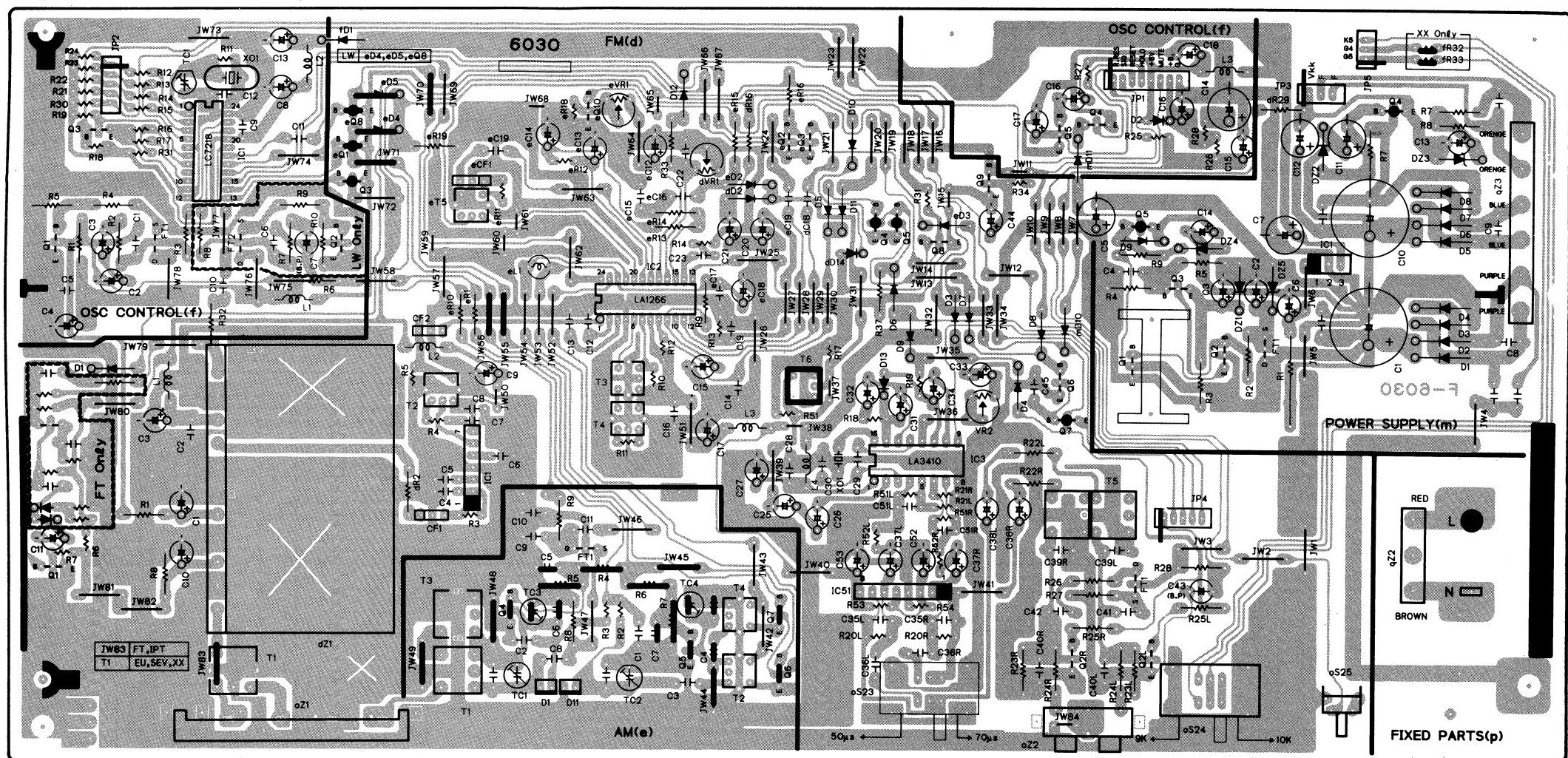
- 1) Remove the bonnet.
 - 2) To remove front panel ass'y-A & B from unit, loosen five screws.
 - 3) To remove the F-6030 board, unhook fifteen them.
- Note:** Don't break stoppers.
- 4) If it is applied bond to point A as figure, cut a joint portion of the bond.
 - 5) Put the bottom side of front panel ass'y-A upward, insert the flat-type driver while pushing the stopper-B.
- Note:** Don't break stoppers.
- 6) To separat the panel ass'y-A and B, unhook eleven them in all while pushing the front panel ass'y-B to the arrow direction as figure.



8. PARTS LOCATION ON BOARD

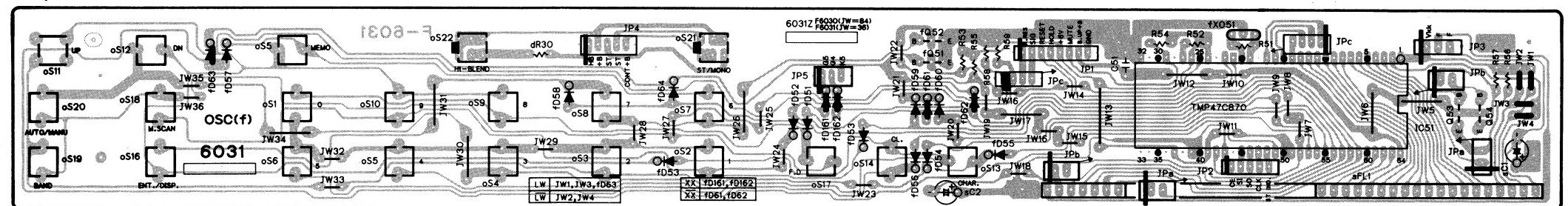
8-1. F-6030 Main Board

Component Side



8-2. F-6031 Operational Switch & FL Display Board

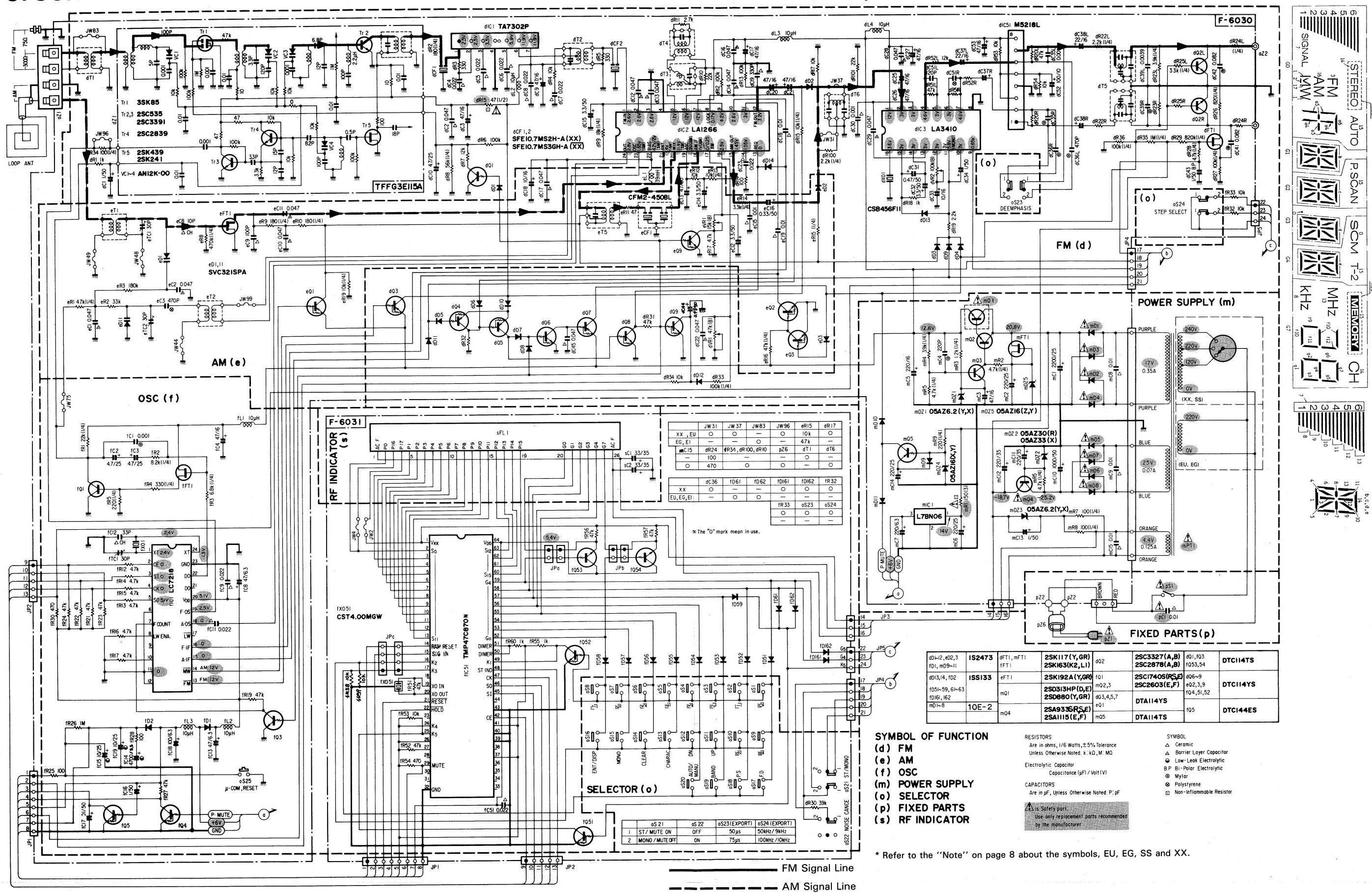
Component Side



9. SCHEMATIC DIAGRAM

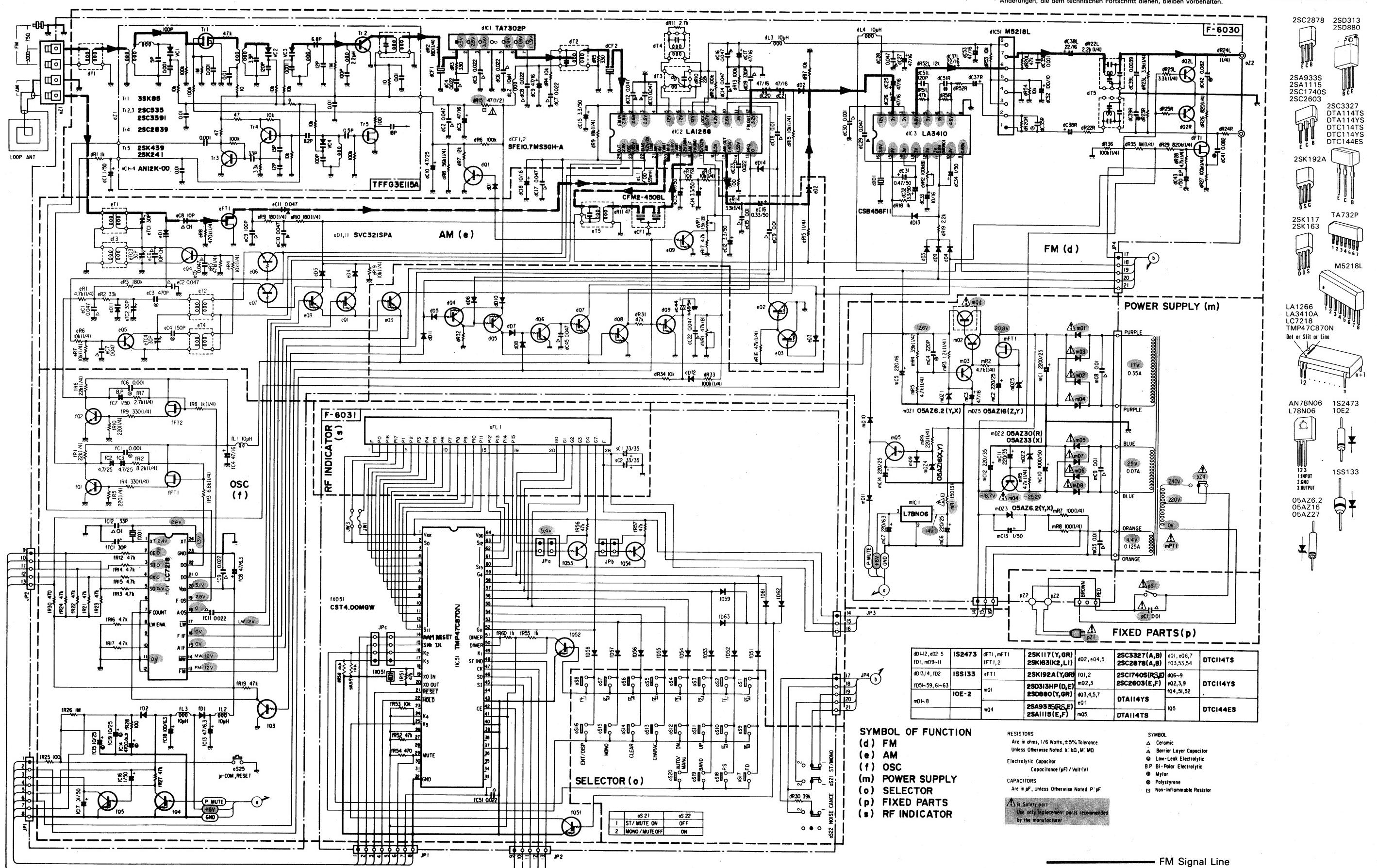
9-1. TU-X301i

* Design and specifications subject to change without notice for improvement.
* La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



A B C D E F G H

9-2. TU-X301iL



10. INTERIOR BLOCK DIAGRAM & TERMINAL FUNCTION OF ICs

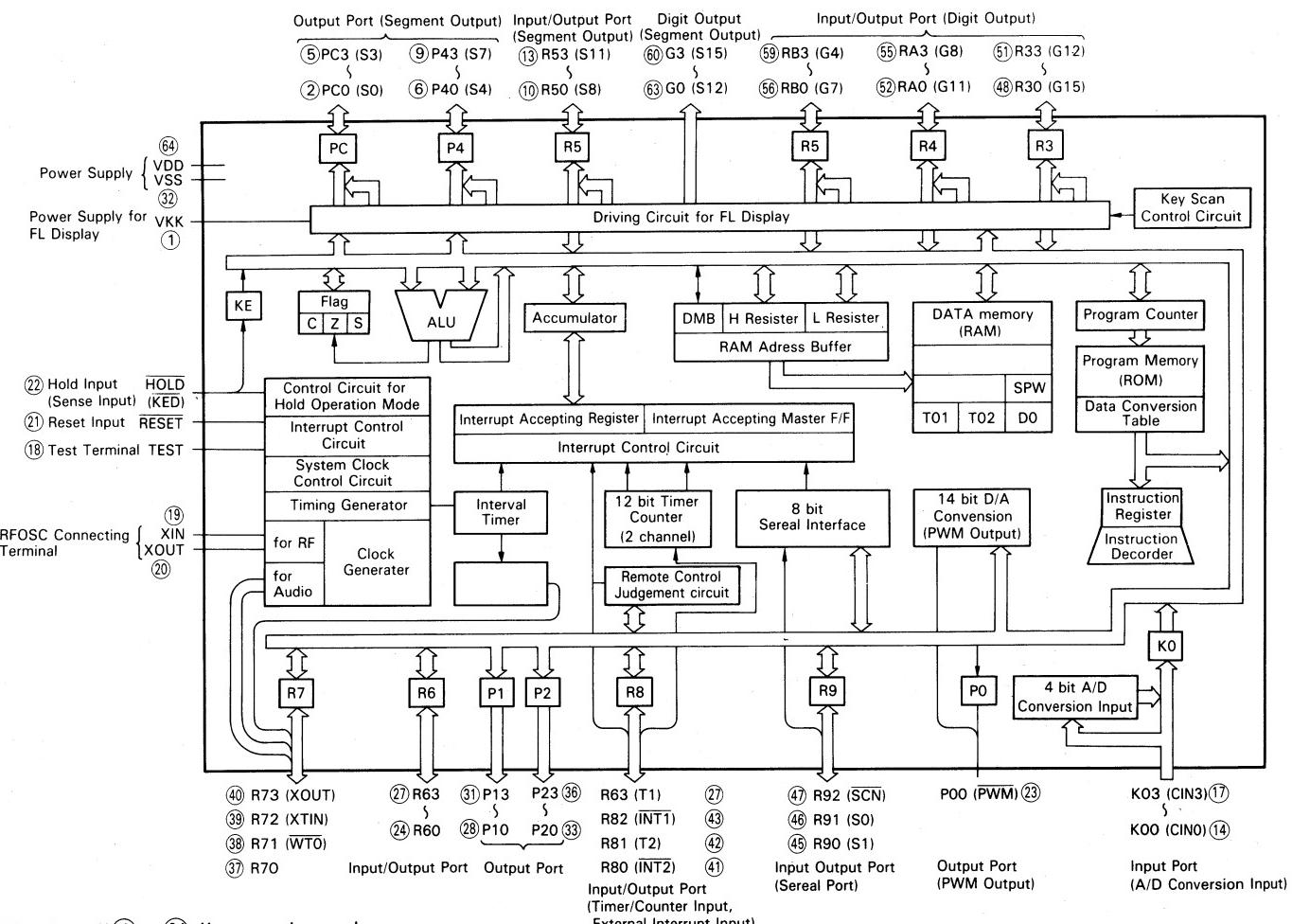
TMP47C870N (DTS/Audio Controller)

◆ Terminal Function

Pin No.	Pin Name	FUNCTION	OUTPUT	
			L	H
52~59 60~63 2~13	G0~G7 S15~S1 S0~S11	Terminal for outputting segment signals to FL display tube.		
64	Vdd	Terminal for applying a device supply voltage. In the normal operation, a voltage of $5V \pm 10\%$ is applied.	—	—
1	Vkk	Terminal for connecting a supply voltage (—) to filament of FL display tube.		
14	SIG IN	Terminal for inputting a signal level.		
15	K1	Terminal for voltage to back up. RAM CLEAR <1.25 RAM KEEP >1.25		
49, 16~17 24~25	K2, K3 K4, K5	Terminal for inputting a key-matrix signal.	○ ○	>0.9V
19~20	XINOUT	Terminal for connecting a quartz oscillator of 4.0 MHz.		

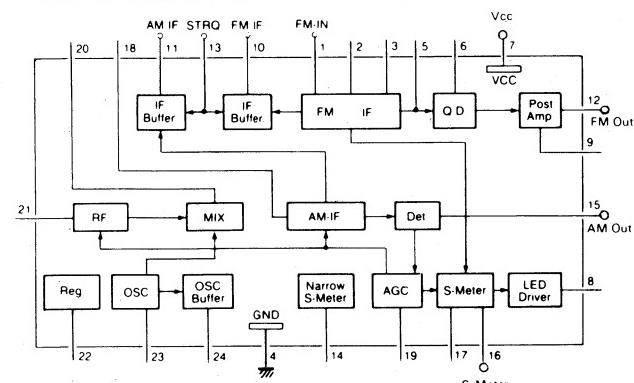
Pin No.	Pin Name	FUNCTION	OUTPUT	
			L	H
21	RESET	Terminal for inputting a reset signal.	○	
22	HOLD	Terminal for inputting a signal to back up.	Back up	Run
29	Mute	Terminal for outputting a mute signal.	Normal	Mute on
32	GND	Ground Terminal.		
42	CE	Terminal for outputting a device select signal.		○
45 46	S IN S OUT	Terminal for serial interfaces.		○
47	CLK OUT	Terminal for outputting a reference frequency signal supplied to LC7218 PLL IC.		○
48	ST IND	Terminal for inputting a select signal of stereo IND.	FL ON	FL OFF

○ marks mean active level.

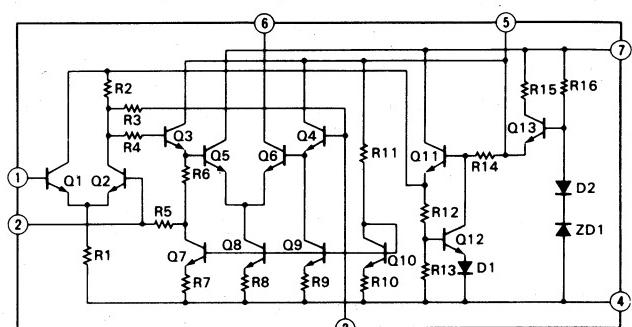


*Numbers **①~⑥4** mean pin number.

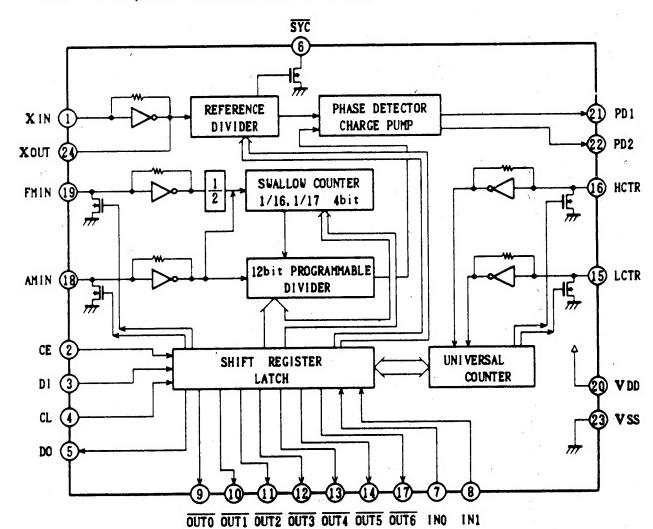
•LA1266 (FM-IF, AM-RF-MIX-IF)



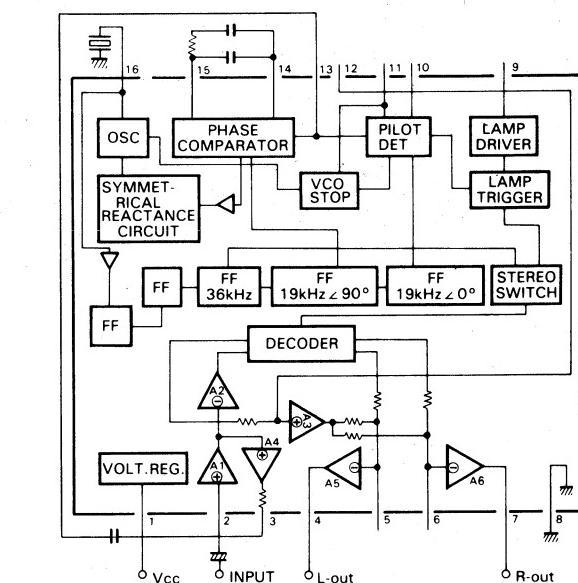
•TA7302P (FM IF Amp.)



•LC7218 (PLL SYNTHESIZER)



•LA3410A (MPX)



◆ Terminal Function of LC7218

PIN NO.	FUNCTION	L level	H level	PIN NO.	FUNCTION	L level	H level
7	SOTP	SCAN	STOP	11	VCR	OTHERS	VCR
8	LW ENABLE	MW ONLY	LW/MW	12	GEQ	OFF	ON
9	TUNING	MANUAL	AUTO	13	FM	FM	OTHERS
10	TAPE 2	SOURCE	MONITOR	14	MW	MW	OTHERS

XIN, XOUT : X'tal OSC (7.2 MHz)

FMIN, AMIN : OSC INPUT

CE, CL, D1, D0 : Serial Data Input

OUT0~OUT6 : Output Port

INO, IN1 : Input Port

HCTR, LCTR : Counter Input

PD1, PD2 : Charge Pump Output

SYC : Clock for Controller (400 kHz)



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